

REMARKS

I. INTRODUCTION

Claims 14, 15 and 21-27 have been amended. Claims 1-13, 28-41 and 44-55 were previously cancelled, without prejudice. Claims 56-72 were previously withdrawn pursuant to a restriction requirement, without prejudice. Applicants reserve the right to file one or more continuation and/or divisional applications with respect to the subject matter of such cancelled and/or withdrawn claims.

Accordingly, claims 14-27, 42, 43, 73 and 74 are now under consideration in the present application. Provided above, please find a claim listing indicating the claim amendments, and current status of the claims on separate sheets so as to comply with the requirements set forth in 37 C.F.R. § 1.121. It is respectfully submitted that no new matter has been added. Further, because independent claims 14 and 15 have been amended to recite the subject matter previously incorporated in claims 21-27, and claims 21-27 have been amended to simply remove such subject matter therein, Applicants respectfully submit that no new issues are raised by way of the amendment to claims 14, 15 and 21-27, and the amendments are presented to be in a better form for appeal.

II. REJECTIONS UNDER 35 U.S.C. § 103(a) SHOULD BE WITHDRAWN

Claims 14-27, 73 and 74 stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 3,969,274 issued to Frampton (hereinafter “Frampton”). Claims 21-27 stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Frampton, in view of U.S. Patent Publication No.

2002/0065378 by Luo et al. (hereinafter “Luo”). Claims 42 and 43 stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Frampton, in view of U.S. Patent No. 4,544,674 issued to Fiato et al. (hereinafter “Fiato”). Claims 14, 15, 18, 19, 21, 22, 73 and 74 stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,073,661 issued to Scheffer et al. (hereinafter “Scheffer”). Claims 16, 17 and 20 stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Scheffer, in view of Frampton. Claims 21, 22, 25 and 26 stand finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Scheffer, in view of Luo. For at least the reasons set forth herein below, Applicants respectfully assert that amended independent claims 14 and 15, and the claims which depend therefrom, are not rendered obvious by Frampton or Scheffer, or rendered obvious by the alleged combination of Frampton with Fiato, Luo and/or Scheffer.

“To reject claims in an application under Section 103, an examiner must show an unrebutted *prima facie* case of obviousness.” *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998). The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Indeed, to sustain a rejection under 35 U.S.C. § 103(a), there must be some teaching, other than the instant application, to alter the prior art to arrive at the claimed invention. “The problem confronted by the inventor must be considered in determining whether it

would have been obvious to combine the references in order to solve the problem."

Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 679 (Fed. Cir. 1998).

The objective standard for determining obviousness under 35 U.S.C. § 103, as set forth in *Graham v. John Deere, Co.*, 383 U.S. 1 (1966), requires a factual determination to ascertain: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; and (3) the differences between the claimed subject matter and the prior art. Based on these factual inquiries, it must then be determined, as a matter of law, whether or not the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the alleged invention was made. *Graham*, 383 U.S. at 17. Courts have held that there must be some suggestion, motivation or teaching of the desirability of making the combination claimed by the applicant (the "TSM test"). See *In re Beattie*, 974 F.2d 1309, 1311-12 (Fed. Cir. 1992). This suggestion or motivation may be derived from the prior art itself, including references or disclosures that are known to be of special interest or importance in the field, or from the nature of the problem to be solved. *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996).

Although the Supreme Court criticized the Federal Circuit's application of the TSM test, see *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, (2007) the Court also indicated that the TSM test is not inconsistent with the *Graham* analysis recited in the *Graham v. John Deere* decision. *Id.*; see *In re Translogic Technology, Inc.*, No. 2006-1192, 2007 U.S. App. LEXIS 23969, *21 (October 12, 2007). Further, the Court underscored that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the

way the claimed new invention does." *KSR*, 127 S. Ct. at 1741. Under the precedent established in *KSR*, however, the presence or absence of a teaching, suggestion, or motivation to make the claimed invention is merely one factor that may be weighed during the obviousness determination. *Id.* Accordingly, the TSM test should be applied from the perspective of a person of ordinary skill in the art and not the patentee, but that person is creative and not an automaton, constrained by a rigid framework. *Id.* at 1742. However, "the reference[s] must be viewed without the benefit of hindsight afforded to the disclosure." *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

The prior art cited in an obviousness determination should create a reasonable expectation, but not an absolute prediction, of success in producing the claimed invention. *In re O'Farrell*, 853 F.2d. 894, 903-04 (Fed. Cir. 1988). Both the suggestion and the expectation of success must be in the prior art, not in applicant's disclosure. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1207 (Fed. Cir. 1991) (citing *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988)). Further, the implicit and inherent teachings of a prior art reference may be considered under a Section 103 analysis. See *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995).

Secondary considerations such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results, if present, can also be considered. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983). Although these factors can be considered, they do not control the obviousness conclusion. *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

To establish obviousness, the prior art references must be evaluated as a whole for what they fairly teach and neither the references' general nor specific

teachings may be ignored. *Application of Lundsford*, 357 F.2d. 385, 389-90 (CCPA 1966). A reference must be considered for all that it teaches, not just what purportedly points toward the invention but also that which teaches away from the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories*, 776 F.2d. 281, 296 (Fed. Cir. 1985).

Independent claims 14 and 15 have been amended to include at least some of the subject matter recited in previously-pending claims 21 and 22, respectively, so as to recite a catalyst having, *inter alia*, a spherical catalyst support, where a diameter of the spherical catalyst support is in a range of approximately 20 μ m to 250 μ m, and wherein the catalyst facilitates a production of hydrogen from a syngas in a slurry bed.

Frampton, on the other hand, only describes a fixed bed catalyst which includes an active catalyst material supported on a particular type of porous silica xerogel, which has been treated with steam under particular temperature conditions. (See Frampton, Abstract). Frampton describes (1) the oxidation of ethylene to acetic acid, (2) the oxidation of ethylene in the presence of acetic acid to vinyl acetate, (3) the oxidation of propylene in the presence of water to acrylic acid, (4) the oxidation of xylenes to the corresponding aromatic acids, e.g., phthalic, isophthalic, or terephthalic acids, (5) the ammonia oxidation of propene to acrylonitrile, (6) the oxidative dehydrogenation of n-butylene, (7) the reductive amination of nitriles, (8) the oxidation of exhaust gas from internal combustion engines, (9) the hydrogenation of unsaturated compounds, (10) olefin polymerization, (11) oxidation of paraffin hydrocarbons, (12) oxidation of SO₂ to SO₃, (13) the hydrogenation of phenol to cyclohexanol, (14)

oxosynthesis, (15) hydrogenation of nitroso compounds, and (16) the oxidation of ethanol to acetic acid. (See Frampton, col. 4, ln. 53 – col. 5, ln. 3).

Indeed, Frampton fails to disclose a catalyst that has a spherical catalyst support, and that facilitates a production of hydrocarbon from a syngas in a slurry bed, as recited in amended independent claims 14 and 15. The Examiner contends that the recitation of a catalyst “that has characteristics that facilitate a production of hydrocarbon from a syngas in a slurry bed”, previously recited in independent claims 14 and 15, is a statement of intended use. Applicants respectfully assert that such statement is not a statement of intended use, and that the catalyst recited in amended independent claims 14 and 15 specifically facilitates a production of hydrocarbon from a syngas in a slurry bed, and that such recitation is now included in the body of these claims.

For example, as described in paragraph 0035 of the present published application, the catalyst for the Fischer-Tropsch synthesis, which is for the slurry bed, requires the abrasion resistance and strength. Further, in the Fischer-Tropsch synthesis reaction, a large amount of water is generated as a by-product, so that the use of a catalyst which is fractured into powders under the existence of water causes an inconvenience, thus requiring caution. Accordingly, it is preferable to use a catalyst support having a spherical shape rather than a catalyst support of a shattered structure potentially having cracks at high probability in which a sharp angle thereof tends to suffer a damage and removal (such as the irregular three dimensional network described in Frampton at col. 6, lines 18-21 thereof). Further, it is described in paragraph [0035] of the present published application that a spherical catalyst support

can be produced having a particle diameter of approximately 20 µm to 250 µm, as recited in amended independent claims 14 and 15, and when using a spraying method, the spherical catalyst support can exhibit excellent abrasion resistance and water resistance can be obtained. Accordingly, it would not have been obvious to one of ordinary skill in the art in view of Frampton to provide a spherical catalyst support having a particle diameter of approximately 20 µm to 250 µm that facilitates a production of hydrocarbon from a syngas in a slurry bed, as recited in amended independent claims 14 and 15.

Scheffer describes a process for the preparation of hydrocarbons, wherein a feed comprising methanol is contacted at reaction conditions with a catalyst comprising: (i) a porous carrier material selected from the group comprising silica, alumina, and mixtures thereof; (ii) cobalt as a metal component deposited on the porous carrier material; and (iii) a promoter selected from the group comprising zirconium, titanium, chromium, ruthenium, iron, magnesium, zinc, thorium and uranium. (See Scheffer, Abstract). However, Scheffer also fails to teach or suggest a spherical catalyst support, and that facilitates a production of hydrocarbon from a syngas in a slurry bed, as recited in amended independent claims 14 and 15. Clearly, no such recited spherical catalyst support or the catalyst facilitating a production of hydrocarbon from a syngas in a slurry bed is even mentioned in Scheffer, much less taught or suggested therein.

Luo describes a silica gel-supported catalyst component for ethylene polymerization. (See Luo, Abstract). However, Luo also fails to teach or suggest a catalyst that facilitates a production of hydrocarbon from a syngas in a slurry bed,

as recited in amended independent claims 14 and 15. Faito also fails to cure such deficiencies of Frampton and Scheffer, and the Examiner does not contend that it does.

Accordingly, Applicants respectfully submit that Frampton and/or Scheffer, individually or in combination with Luo and/or Faito, fail to teach or suggest the recitations of amended independent claims 14 and 15 as required by 35 U.S.C. § 103.

Regarding the 35 U.S.C. § 103(a) rejections of the dependent claims, Applicant respectfully asserts that Frampton or Scheffer fail to teach or suggest the explicit recitations of independent claims 14 and 15, as amended herein. Accordingly, the claims which depend from such amended independent claims 14 and 15 are also patentable over Frampton and Scheffer, or by the combination of Frampton with Luo, Faito and/or Scheffer, at least because these publications fail to teach or suggest the features of amended independent claims 14 and 15.

Therefore, for at least the reasons as presented herein above, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claims 14-27 and 73-74 as allegedly being unpatentable over Frampton, the 35 U.S.C. § 103(a) rejection of claims 21-27 as allegedly being unpatentable over Frampton in view of Luo, the 35 U.S.C. § 103(a) rejection of claims 42 and 43 as allegedly being unpatentable over Frampton in view of Faito, the 35 U.S.C. § 103(a) rejection of claims 14, 15, 18, 19, 21, 22, 73 and 74 as allegedly being unpatentable over Scheffer, the 35 U.S.C. § 103(a) rejection of claims 16, 17 and 20 as allegedly being unpatentable over Scheffer in view of Frampton, and the 35 U.S.C. § 103(a) rejection of claims 21, 22, 25 and 26 as allegedly being unpatentable over Scheffer in view of Luo.

III. CONCLUSION

In light of the foregoing, Applicants respectfully submit that pending claims 14-27, 42, 43, 73 and 74 are in condition for allowance. Prompt consideration, reconsideration and allowance of the present application are therefore earnestly solicited. If any issues remain outstanding, the Examiner is invited to contact the undersigned via the telephone number provided below.

Respectfully submitted,

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